May 1992

Clinical Center News

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Dr. Harvey Klein wins award

PET Dept. Collaborates with NINDS to Study Language and Memory Processes in the Brain

By Karen Riedel

The Clinical Center Positron Emission Tomography (PET) Department has implemented noninvasive methods of brain mapping in a collaborative effort with NINDS to study the functions of language and memory in the brain.

For more than 130 years, the most common approach to study the physiological and functional anatomy of the brain has been to look at the effects of injury or disease on the brain, which often requires invasive procedures. Today, a new experimental approach using PET permits a noninvasive, carefully planned, complex look at brain functions.

"The PET scanner enables us to look at a normal or injury-free brain to see which parts are active when a person performs a task," explains Dr. William Theodore, acting chief of the NINDS epilepsy research branch. Dr. Peter Herscovitch, chief of the Clinical Center's PET imaging section, adds, "Mapping normal brain function is a tremendous advantage in the neurosciences. It is a very powerful window to the brain. A great variety of studies can be done using PET."

Among these studies is the cerebral blood-flow study of language and memory, conducted by Theodore and his team, including Senior Staff Fellow Dr. Teresa Blaxton, Medical Staff Fellows Drs. Susan Bookheimer, William Gaillard, Beth Malow, and Tom Zeffiro, Chief of the EEG lab Dr. Susumu Sato; and the Clinical Center PET team, including Chief PET Technologist Paul Baldwin; PET Technologists Margaret Der, Stacey Stein, Jerry Jacobs, Sheila Green, Kim Robles,

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Updated Safety Rules to Affect Clinical Center Staff

By Jan Lipkin

Federal regulations affecting protections for healthcare workers have been updated and must be implemented by July 1992, according to Susan Beekmann, infection control specialist in the Clinical Center's hospital epidemiology service (HES).

In December, the Occupational Safety and Health Administration (OSHA) issued guidelines establishing several new requirements for protecting healthcare workers from health risks on the job.

"We already carry out a large percentage of the updated rules at the Clinical Center," says Beekmann. But there will be some changes. The new regulations require annual training, rather than one-time training, for any employee who has occupational exposure to human blood, certain body fluids, and other potentially infectious materials. Occupational exposure refers to possible skin, eye, mucous membrane, or parenteral contact with these materials that could result when performing duties at work. "Most clinical contact with patients or laboratory specimens constitutes what OSHA calls 'a potential' for

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Letters to the editor...

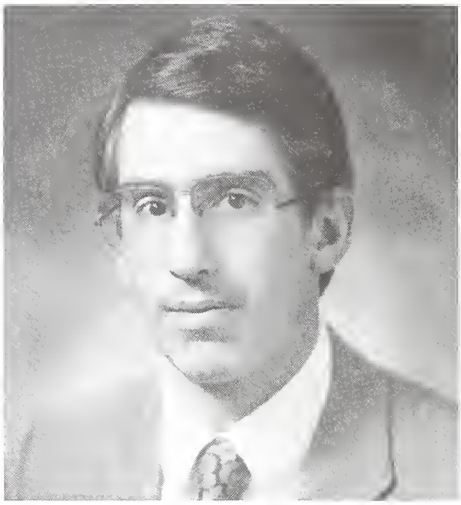
Employee of the Month

Constance L. Seiss

Ms. Siess had complete responsibility to organize and execute the retirement and shifting of over 13,000 inactive and retired medical records. She planned the project, formed a project team, assigned responsibilities, monitored performance, and completed a quality assurance review of the final product. In addition, she managed to complete the project way ahead of schedule, thus freeing up valuable and limited space for active medical documentation. Says Jerry King, chief of the Medical Record Department, "She is most deserving of this award." ■

An earlier *CC News* edition should have included Karen Pascal, employee development specialist, as one of the speakers at the CC Women's Forum in March.

Dr. Harvey Klein Receives Director's Award



Dr. Harvey Klein, Chief, DTM.

Dr. Harvey Klein, chief of the Department of Transfusion Medicine, was honored with the annual Clinical Center Director's Award by Dr. Saul Rosen, Clinical Center Acting Director, during a recent department heads' meeting. "It was quite a surprise," said Klein. "I got a note saying that I had to be present at that meeting rather than send a representative, but I didn't know why."

The award reads: "For sustained, outstanding management of the Clinical Center Transfusion Medicine Department and important contributions to the National Marrow Donor Program." Said Rosen, "The Department of Transfusion Medicine has had a number of remarkable achievements this year." He cited the department's ability to remain self-sufficient even when the regional blood supply was low, its high-quality support of research protocols, and its service to the National Marrow Donor Program. ■

Blood Donor Receives Award

Dr. Judah Rosner recently gave his 100th blood donation at the Blood Donor Center. Dr. Susan Leitman, chief of the blood services section in the Department of Transfusion Medicine, presented Rosner with a certificate marking his donation of blood and blood components to approximately 300 to 400 patients.

"Completing my 100th donation was a source of pride and accomplishment for me," commented Rosner. The blood donor center congratulates Rosner on his milestone and hopes to see him for many years to come.

Anyone interested in donating blood for the Clinical Center can call the Blood Donor Center at 496-1048. ■

Dr. Susan Leitman gives award to Judah Rosner.

CC News

Editor: Karen Riedel

Clinical Center News is published monthly by the Office of Clinical Center Communications, Colleen Henrichsen, Chief, for employees of the Clinical Center, National Institutes of Health, Department of Health and Human Services.

News, article ideas, calendar events, letters and photographs are encouraged and can be submitted to Bldg. 10, room 1C255, or by calling 496-2563.

Deadline for submission is the second Monday of each month.

CC Celebrates Volunteers

By Karen Riedel

How many times have you wondered about the cookies on the courtesy cart that the volunteers wheel around the hospital? Have you ever wondered about the volunteer pushing the cart? The Clinical Center volunteer program comprises a truly special group of people who are often overlooked by employees, but are well known to patients and visitors.

The volunteer program recently honored 200 Clinical Center volunteers with the ninth annual volunteer recognition ceremony. The awards for those with the most service hours (as of December 1991) went to Pearl Mason, 9,775 hours; Nelson Chipchin, 8,357 hours; and Omer Bedard, 7,557 hours. Mason, a Red Cross volunteer, has been stationed at the information desk since November 1965. Chipchin is an interpreter for Russian patients and has served since March 1977. Bedard has volunteered in the 12th floor pediatric playroom and Patient Activities Department since December 1983.

Lilly Berkes

In addition to these generous people, many other gifted and dedicated volunteers grace the corridors, labs, and offices of the Clinical Center.

Take Lilly Berkes, for example. Originally from Osijek, Yugoslavia (before it was carved from the Austrian-Hungarian Empire), Lilly speaks seven languages fluently, and volunteers as a translator with the Clinical Center. As a child, she learned German, Hungarian, Croatian, and French. Later, she lived in Italy for two years and learned Italian, and lived in Spain for 38 years and mastered Spanish. When her daughter came to the United States, Berkes went to London for about one year to learn English.

In 1978, Lilly came to the United States and also to the Clinical Center. "When I came to this country, I was bored. I knew only a few people," she says. "I went to the Red Cross and they asked me if I could sew. I said 'yes I can sew, but I don't like to.' So they sent me to NIH to be a translator." She has been here ever since—two mornings every week.

Lilly speaks clearly and concisely with a beautiful accent. "I think English is my worst language," she says humbly. If English is her worst language, then she must be dynamite with the others. "Spanish is my favorite language," she says with a smile. "When I was in Italy, I thought Italian was the most beautiful language. But after living in Spain for a few years, I thought 'now I like Spanish.'" Incidentally, Lilly says that Spanish is the language she is needed to translate most often at the Clinical Center.

Betty Warsavage

Lilly uses her skills to help patients communicate with doctors and other healthcare providers. She explains, "A patient who doesn't speak English is always very happy to be with someone who speaks English." She continues, "Sometimes I see many patients, other times I spend several hours with one patient. I go with them to explain things to the nurses and doctors, and to do other things like explain activities in the arts and crafts room."

Lilly finds her work most rewarding when patients return to the Clinical Center. "They are so happy to see me when they come back. They talk to me like an old friend. This is something I enjoy, and the patients enjoy," she says.

When asked how long she plans to volunteer at the Clinical Center she says: "As long as I can hear and see, I can come." She rarely, if ever, uses glasses and she hears even the faintest sounds. I have a feeling she'll be around for quite a while.

Betty Warsavage is one of the newest Clinical Center volunteers. But, she is no stranger to hospitals. After the loss of two husbands to lung cancer, and the death of her mother, she challenged herself to volunteer in a hospital—a place

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Dr. Teresa Blaxton of NINDS prepares Chris Randolph, volunteer and neuropsychologist at the Clinical Center, for a memory test using audio.

Mel Packer, and Susan Fluck; and members of the PET Department's radiochemistry section who synthesize the radioactive water used in these studies. "There is a clear collaboration between NINDS and the Clinical Center," says Theodore. "The Clinical Center PET Department helps us design the protocols, and provides the core resource, the PET scanner, and the technical expertise to operate it." NINDS investigators conduct the studies and also help to design the protocols and analyze data. "We work very closely to provide quality studies," Herscovitch adds.

In the language and memory studies, the PET scanner provides images of cerebral blood flow in normal volunteers to determine brain activity by measuring radioactive tracers that are injected into the bloodstream and are taken up by the brain. Herscovitch explains why blood flow is measured: "When a part of the brain is active, the neurons in that area work harder. Neurons require energy in the form of glucose and oxygen, but the brain does not store these substances. So when the brain needs more energy, it needs to increase blood flow acutely. Therefore, the active region of the brain has greater blood flow." Even though the mechanism linking blood flow to neuronal activity is not well understood, this is a very powerful method for mapping local brain function. He adds, "We are not measuring how far a car travels, we are measuring gas consumption."

Here is how the cerebral blood-flow study of language and memory works. A subject lies very still with his or her head in the PET scanner. A small amount of water labeled with radioactivity is injected into the subject's bloodstream. The water travels in the blood, diffuses out of the capillaries, and into tissue. The greater the blood flow in a brain region, the greater the amount of radioactivity delivered to it. Positrons (positively charged electrons) are emitted by the radioactive water and interact with electrons, which are found in tissue, to produce gamma rays. The PET scanner has 2,048 detectors in eight rings that detect the gamma rays. It then produces a computerized map of radioactivity, thus revealing the distribution of blood flow in the brain. While the patient is in the PET scanner, he or she performs various memory or language tasks, depending on the study, such as looking at a picture and naming it, reading words, and recalling a list of items read 10 minutes earlier.

During a study, six to eight injections of radioactive water are given to the patient—each one for a particular task. The tasks take from two to five minutes and are followed by five-to-10-minute rest periods. Each study lasts about two-and-a-half hours, from preparation until finish.

Susan Bookheimer, neuropsychologist and NINDS staff fellow, conducts the language component of the cerebral blood-flow study. "I am looking at the processing of language in the brain," she explains. "I am interested in how people make sense of what they see and hear, how they organize information, how they understand meaning, and how they choose what they say."

This study consists of six simple two-minute tasks. A subject lies on the PET bed with his or her head on a stabilizing mechanism in the PET scanner. To keep head movement to a minimum, the subject wears a mask that is molded onto his face. Bookheimer positions equipment such as a slide projector and mirrors for the task. She then darkens the room to prevent "noise"—unwanted brain activity generated by light. "The brain will register even the

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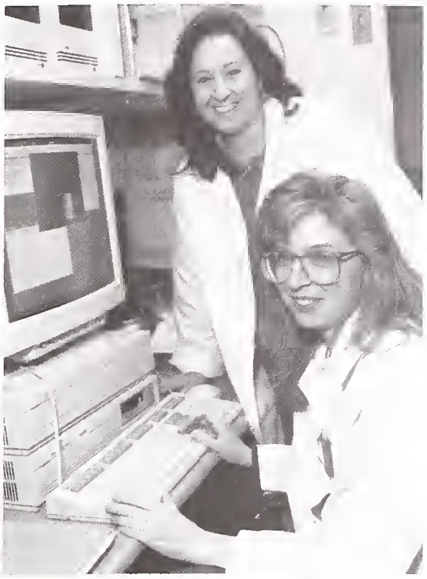
PET STUDIES continued from page 4



Dr. Teresa Blaxton looks over the shoulder of Dr. Susan Bookheimer to see PET images on the computer.

slightest things," she comments.

Bookheimer begins watching a monitor in the corner of the room, which guides her in conducting the study. In a small room down the hall, a PET technologist waits by the dumbwaiter. Members of the PET Department's radiochemistry section use a cyclotron (a large, complex machine that makes radioactive atoms) two floors below to prepare the first dose to be administered to the subject. In this case, they are preparing $H_2{}^{15}O$ (water labeled with radioactive oxygen-15). Timing is everything in this study. The $H_2{}^{15}O$ has a half-life (the amount of time it takes for the radioactivity to decay to half its original value) of two minutes. The dose is sent up the dumbwaiter, and a loud bell rings. The technologist grabs the handles of the lead apparatus containing the dose. She places it on a cart, and carefully rushes the cart to Bookheimer in the PET room. Then the door closes. Inside the PET room, the monitor displays the amount of millicuries (a measurement of radioactivity) in the dose from exactly the time the dosage is prepared until it decays. At precisely the right time, the PET technologist gives the subject the injection and begins the study.

Two minutes later, the first task is completed. The subject will rest for five minutes, and then the cycle will begin again, until he has performed each of the six tasks. During the study, technologists in the control room monitor PET images of brain activity, the patient, and progress of the study. When the experiment is finished, the subject can go into the control room and look at his brain's images. These images are stored in a computer bank, from which Bookheimer and other investigators can retrieve them. "There is a lot going on," says Theodore. "It is like a three-ring circus."

Teresa Blaxton, neuropsychologist and NINDS senior staff fellow, conducts the cerebral blood-flow studies of memory. She conducts two classes of tests, conceptual and perceptual, to study different patterns of blood flow. "We are working on identifying different classes of memory. We believe that more than one system is responsible for memory. Our studies with PET show that conceptual tests produce different patterns of brain activity than perceptual tests produce. Therefore, we can assume that the brain is doing something different for a particular memory task." Blaxton conducts experiments in much the same manner as team member Bookheimer—only the tasks and related equipment are different. Examples of memory tasks: a subject listens to something meaningful and is asked to repeat it a short time later; a subject listens to a short verbal description of something and is then asked to tell what is being described. In both language and memory studies, tasks can be visual or auditory.

Following each study, investigators analyze the PET images. The raw PET images can be available as early as the late afternoon of a morning study. They are then mathematically refined for detail and clarity. The investigator is able to look at specific images of brain activity for each task. He or she can make comparisons among subjects in a particular study, compute averages across a study, or make individual evaluations. New to the study is the marriage of the PET image with a magnetic resonance image (MRI). In addition to the PET procedure, subjects undergo an MRI. In the computer lab, investigators superimpose the MRI on the PET image. Bookheimer explains, "The PET has low resolution—you can see the activity, but you cannot tell exactly where it is. The MRI offers a good structural picture. So we use the two together to see clearly the exact locations of the activity." Other language- and memory-related functions being studied are language differences in males and females, the complexity of speech as it affects brain activity, left- versus right-brain dominance, and the development of language in left-handed versus right-handed people. In addition, studies are performed in patients with epilepsy to evaluate the effect of seizures on brain functions.

Collaborations such as this one yield valuable information for many scientists, not only those directly involved, according to Theodore. "I hope our work will prove useful to many other institutes," he comments. ■

On the QT

Employee Satisfaction Survey Coming May 27th:

Your Opinions Count!

By Sue Kendall

This month, you will be asked to participate in an annual, Clinical Center-wide employee satisfaction survey, part of the Quality Together (QT) program. Three customer surveys will be done over the next few months: one for patients, one for physicians, and this one, for employees. These surveys will help determine customer expectations and how well the Clinical Center meets them.

These three customer surveys are being organized by the Customer Assessment Champion Project, which is composed of three task forces, one for each survey type. Task force members represent a cross-section of departments and levels. They have worked closely with survey experts from Ohio State University to customize a widely used healthcare survey to the unique environment of the Clinical Center.

The employee survey will be held from May 27 through June 3. On one of those days, you will be asked to go to a neutral location to fill out the survey in a quiet atmosphere. The survey will ask about your job, your work environment, morale, feelings, and attitudes to help identify strengths and weaknesses in the Clinical Center. To preserve confidentiality, the survey will be administered by an outside consultant; you will place your completed survey in a sealed envelope; and no names or identifying codes will be used on the form. Your participation is voluntary, but remember, if you choose not to fill out the survey, you let others speak for you, and your concerns may not be addressed.

After all the surveys have been filled out, the consultant will summarize the responses. About six to eight weeks later, each employee will get a summary of the overall survey results. Top management and department heads will get a more detailed summary. The employee task force will work with top management to address the major issues identified in the surveys through our QT program.

Task forces are also working with consultants to draft an inpatient survey. Once that survey has been administered, probably June or July, an outpatient survey will be developed, probably by August. Also, a telephone survey of 500 Clinical Center physicians has just been completed. Data analysis is underway, and the findings will be reported in June. Physicians will be resurveyed once a year.

It's natural for you to have questions and concerns about the employee survey. Since your participation is so important, the task force has arranged the following ways for you to clear up your questions:

1. Watch your May 12 pay slip for another memo outlining specifics, such as when and where you can go to fill out the survey and how long it will take.

2. Attend a task force-sponsored open forum on one of the following dates:

   •**Thursday, May 7, 7:00 a.m. to 8:00 a.m.**, B1 Nursing Classroom (across from Crestar Bank)
   •**Monday, May 11, noon to 1:00 p.m.**, Little Theater (Visitor Information Center)
   •**Tuesday, May 19, 11:00 p.m. to midnight**, B1 Nursing Classroom (across from Crestar Bank)

3. Contact P.J. Maddox, project champion, at 496-0441, or Maureen Stoppenbach, QT coordinator, 496-2897, your department head, or any task force member with your questions.

The task force encourages you to participate in the employee satisfaction survey. It's your chance to give your opinion and improve the quality of the Clinical Center as a place to work. ■

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Pearl Mason

she had grown to dislike. "I've been a volunteer in the Red Cross information office for about one year, and I'm thrilled to death about it!" she explains enthusiastically. "The Clinical Center is different from other hospitals. Everybody is so nice and they really care about the patients." Betty works one day a week and has already accrued over 100 hours. I've done so many interesting things," she explains. "I love watching everything from the front office—it's really a learning experience. I also like serving the coffee, delivering the mail, taking balloons upstairs, and babysitting. I just love volunteering here," she adds.

Pearl Mason is the day captain in the Red Cross information office. She has been a volunteer here since 1965, and has now accrued more than 10,000 hours. She comes here one day each week, from 8 a.m. until 4 p.m. Sitting at the information window, she has questions fired at her from the right and the left, all day long. "We're here to answer questions the best we can—if we don't know the answer and can't find it, we know how to find someone else who can find it." She adds, "Usually in a place like this, you are lost before you even get here. We do anything we can to help people and please people, within the scope of what's right."

Stan Horowitz has been with the Clinical Center since 1983. A former accountant, Horowitz volunteered with the Clinical Center three years after being a patient here. He works in the X-ray file room and is helping to computerize the volunteer program. Stan says that what he likes best about volunteering here is "Nelva [Reckert] and the volunteer program staff. The people in our office are great!" he exclaims. "It's such as good program. Everybody who works in it enjoys it."

The common thread among the volunteers is their enthusiasm. Each one has a different story but they are all happy to be here and eager to help others. Keith Redmond, donor resources supervisor for the blood bank, works frequently with volunteers. "They are a tremendous help to us—especially with donor appreciation day, and day-to-day activities."

Says Andrea Rander, chief of the volunteer program, "We are very proud to have all our volunteers on our team. Their commitment to helping others is truly remarkable. Most of our volunteers are committed to the point that if they miss a day, they feel guilty." She adds, "I just love my job and it is the volunteers who make it worthwhile." ■

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occupational exposure to blood-borne pathogens like human immunodeficiency virus (HIV) and hepatitis B," she explains.

Up to now, the Clinical Center has conducted a one-time training in universal precautions policy during employee orientation. (Mandated by OSHA, this policy requires specific methods and safeguards, such as wearing gloves and other protective gear, when performing procedures that might expose the worker to a patient's blood or body fluids.)

Under the revised guidelines, every employee's job duties must be evaluated for activities that may result in occupational exposure. "At the Clinical Center, we anticipate requiring annual training for all physicians, nurses, and clinical laboratory workers," says Beekmann.

In some instances, annual training will be relatively easy to add. For example, a refresher course will be incorporated into the annual review sessions for Clinical Center nurses. Beekmann is working on a plan to provide annual training for the remainder of the Clinical Center staff.

Beekmann says that the HES will now coordinate most of the regulations in the Clinical Center. The Departments of Safety and Engineering will share responsibility for portions of the OSHA rules.

"In addition, we must reach institute staff at the Clinical Center," says Beekmann. "A large portion of people with

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occupational risk don't work directly for us, but for the various institutes we service." The HES is considering ways to work with the institutes to ensure that these employees receive adequate training. "OSHA will levy fines for noncompliance of the rules," warns Beekmann, "and the Clinical Center and the institutes will be responsible for any noncompliance by their staff."

Beekmann outlined some other changes. "OSHA has put the onus on the employer or institution to protect the employee adequately by requiring employers to offer free hepatitis B vaccinations. We have done this already, for nine years," she says. However, the new rules will require a signed release form from anyone with occupational exposure who declines the vaccine. Why would anyone refuse the vaccine? "There can be religious reasons," says Beekmann. "And, people may have unfounded fears of contracting a disease from the vaccine itself."

Beekmann encourages every employee with patient contact to be vaccinated. "This covers physicians, nurses, and support staff," she says. Employees with questions should call the HES at 496-2209. To schedule an appointment for the vaccination, call the Occupational Medical Service at 496-4411. ■

May Calendar of Events

6 **Grand Rounds**
12 noon-1 p.m. Lipsett Amphitheater
Childhood Acute Lymphoblastic Leukemia, David Poplack, M.D., NCI; *The Sensitive Heart*, Richard Cannon, M.D., NHLBI.

6 **NIH Lecture**
3 p.m. Masur Auditorium
Splicing of Nuclear Precursors to Messenger RNA's, Phillip Sharp, Ph.D., Massachusetts Institute of Technology.

13 **Grand Rounds**
12 noon-1 p.m. Lipsett Amphitheater
Transfusion-Associated Graft-versus-Host Disease, Susan Leitman, M.D., CC; *Evolving Views of Mental Disorders and Their Treatment*, Alan Leshner, Ph.D., NIMH.

20 **NIDDK Clinical Nutrition and Obesity Lecture Series**
7 p.m. to 8:30 p.m. Lipsett Amphitheater. *Gender, Genetics, and Obesity.* M.R.C. Greenwood, Ph.D, University of California, Davis. For more information, call Van S. Hubbard, M.D., at 496-7823.

20 **Grand Rounds**
12 noon-1 p.m. Lipsett Amphitheater
The Professor in Action, Richard Kopelman, M.D., Tufts New England Medical Center; *Challenges*, James Balow, M.D., NIDDK. *To Decode Cryptic Clinical Cases.*

21 **NIH Lecture**
3 p.m. Masur Auditorium
Creating Mice with Targeted Disruptions in Proto-oncogenes, Mario R. Capecchi, Ph.D., University of Utah.

27 **Clinical Staff Conference**
12 noon-1:30 p.m. Lipsett Amphitheater; *von Hippel-Lindau Syndrome*, W. Marston Linehan, M.D., NCI, Moderator.

R&W Theatre Group
The Imaginary Invalid. May 15, 16, 22, 23, 29, 30, at 8 p.m.; and May 17 and 24 at 3 p.m.. Masur Auditorium. For more information and for tickets, call Brenda Merson at (301) 253-3511.